



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200

**D3391-023**  
**Job Sheet 168940**



Part No: D3391-023

Job Qty: 1 ea

Part Name: Mid Tube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 11/27/17

Job Tracking No:

Due Date: 12/8/17

Created By: Marie Lajeunesse

Type: Stock

Description:

Customer: Abu Dhabi Aviation (CABUD01)

PO Box 2723, Abu Dhabi International Airport Abu Dhabi, , 2723 United Arab Emirates ph:971 2 575 8000  
fx:971 2 575 7775.

Ship Via:

### Bill of Materials

### Job Routing

| Op No | Operation          | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |           | Sign-off      |
|-------|--------------------|-------|------------|----------|-----------|---------|-----------------------|-----------|---------------|
|       |                    |       |            |          | Setup hrs | Run Hrs | Workcenter / Supplier | Lead Time |               |
| 90    | Start up Operation | 1 Ea  | 12/7/17    | 12/7/17  | 0.00      | 0.00    | Start Up Skidtubes    |           |               |
| 100   | Skid tubes         | 1 pcs | 12/7/17    | 12/7/17  | 0.88      | 2.11    | Skid tubes            |           | AP 2018/01/09 |
| 110   | QC                 | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.00    | QC5                   |           |               |
| 120   | HandFinish         | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.38    | HandFinish1           |           | 2018/01/09    |
| 130   | QC                 | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.00    | QC7                   |           | BE 12/01/17   |
| 140   | Skid tubes         | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 2.11    | Skid tubes            |           | MBG 10-01-09  |
| 150   | QC                 | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.00    | QC5                   |           | BE            |
| 160   | Skid tubes         | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 2.11    | Skid tubes            |           | BE            |
| 170   | QC                 | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.00    | QC10                  |           | PD 18-01-10   |
| 180   | QC                 | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.00    | QC5                   |           | PD 18-01-10   |
| 185   | HandFinish         | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.38    | HandFinish2           |           | BE 18/01/11   |
| 191   | SprayPaint         | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.91    | Spray Paint           |           | DT 18-01-12   |
| 200   | QC                 | 1 pcs | 12/7/17    | 12/7/17  | 0.00      | 0.00    | QC14                  |           | BE 18-01-15   |
| 230   | HandFinish         | 1 pcs | 12/8/17    | 12/8/17  | 0.00      | 0.38    | HandFinish4           |           | BE 18-01-15   |
| 240   | QC                 | 1 pcs | 12/8/17    | 12/8/17  | 0.00      | 0.00    | QC5                   |           | BE 18-01-16   |
| 250   | Packaging          | 1 pcs | 12/8/17    | 12/8/17  | 0.00      | 0.00    | Packaging3            |           | Smf           |
| 260   | QC21-SA            | 1 Ea  | 12/8/17    | 12/8/17  | 0.00      | 0.00    | QC21                  |           |               |

Part Op 100 - 1-Cut tube to finish length as per Dwg D3391 2-Drill pilot holes using DT8796 (Do not drill "B" holes) and drill only 1  
Descriptions: fwd saddle hole on one side only as per Dwg D3391 3-Open aft saddles and GHW holes to Ø0.4375" except for fwd saddle  
holes 4-Remove .030" from Fwd indexing Ridge as per Dwg D3391 5-Remove indexing ridge on Fwd & Aft end of  
skid tube as per Dwg D3391 6-Deburr, scribe batch # on aft end. 7- Locate D3391-021 in D3391-023 at 9:00" (see view  
E-F) 8- Transfer drill one fwd saddle hole only to .188" dia, transfer drill all remaining fwd saddle holes using DT 8149  
locating from previously drill .188" dia hole, using t-pins and clicos to ensure perfect alignment, open up previously transfer  
drilled pilot holes in D3391-023/021 using drill press. ON FIRST SIDE ONLY drill out 2nd and forth fwd saddles holes to  
0.500" as per ON 2ND SIDE ONLY ream out 2nd and forth saddle hole to 0.499". D3391-021  
BATCH: 9- Drill #30 pilot holes using wearplate Jig DT8217 Identify Ø0.375" holes with paint marker,  
\*\*\*DO NOT DRILL HOLES #3-19-20 FROM FWD END OF JIG\*\*\* Locating from two fwd wearplate holes in D3391-023  
drill remaining 6 wearplate holes in D3391-021 using DT8937 10- Open wearplate holes of D3391-023 assembly detail  
section G-G to Ø0.375" (10 holes) as per Dwg D3391 Open wearplate holes of D3391-023 assembly detail section H-H to  
Ø0.297" (20 holes) as per Dwg D3391 Deburr and blow out all chips from inside tube, scribe  
140 - 1-Open float bag holes as per dwg 2-C'sink float bag holes as per dwg 3- Prepare tube for welding 4-Bond web in  
place as per Dwg D3391 & QSI 015. Adhere for 12 hours) A/R Sikaflex exp: 18-04-24 batch#: 138654  
NOTE: ENSURE WEB IS INSERTED IN AFT END OF TUBE  
160 - 1-Weld crossbolt spacer as per dwg D3391 & QSI 004 2-grind weld flush



QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

### WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only

| Work Order: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| <b>Description Work Order Deviation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left; padding: 5px;"><b>Root Cause</b></th> <th colspan="2" style="padding: 5px;"></th> <th colspan="2" style="padding: 5px;"></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Environment <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> No Re-verification</td> <td style="padding: 5px;"><input type="checkbox"/> Pressure/Forced</td> <td style="padding: 5px;"><input type="checkbox"/> Temperature/Cu</td> <td colspan="2" rowspan="13" style="vertical-align: top; padding: 5px;"> <div style="float: right; width: 80%;"> <b>Dart Aerospace Ltd.</b><br/>           1270 Aberdeen Street<br/>           Hawkesbury, ON K6A 1K7<br/>           CANADA<br/>           TEL.: 1 613 632 - 5200<br/>           Email: sales@dartaero.com<br/>           www.dartaerospace.com         </div> <div style="clear: both;"></div> </td> </tr> <tr> <td style="padding: 5px;">Design <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Operator</td> <td style="padding: 5px;"><input type="checkbox"/> Bending</td> <td style="padding: 5px;"><input type="checkbox"/> Set-up</td> </tr> <tr> <td style="padding: 5px;">Doc/Data <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Offset/Setup</td> <td style="padding: 5px;"><input type="checkbox"/> Centre Not Concentric</td> <td style="padding: 5px;"><input type="checkbox"/> BOM/Route</td> </tr> <tr> <td style="padding: 5px;">Equip/Tooling <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Supplier</td> <td style="padding: 5px;"><input type="checkbox"/> Cracks</td> <td style="padding: 5px;"><input type="checkbox"/> Broken/Damage/I</td> </tr> <tr> <td style="padding: 5px;">Handling/Pre <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Training</td> <td style="padding: 5px;"><input type="checkbox"/> Crimp/Kink/Ripple/Wave</td> <td style="padding: 5px;"><input type="checkbox"/> Inspection Incomple</td> </tr> <tr> <td style="padding: 5px;">Material <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Use for Testing</td> <td style="padding: 5px;"><input type="checkbox"/> Cuffs</td> <td style="padding: 5px;"><input type="checkbox"/> Contamination</td> </tr> <tr> <td style="padding: 5px;">Internal Transport <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Poor Information</td> <td style="padding: 5px;"><input type="checkbox"/> Crushing</td> <td style="padding: 5px;"><input type="checkbox"/> Countersink</td> </tr> <tr> <td style="padding: 5px;">Tribal Knowledge <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Rushing</td> <td style="padding: 5px;"><input type="checkbox"/> Heat Treat</td> <td style="padding: 5px;"><input type="checkbox"/> Cut Too Short</td> </tr> <tr> <td style="padding: 5px;">LOA <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Product Improvement</td> <td style="padding: 5px;"><input type="checkbox"/> Wave/Twist in Tube</td> <td style="padding: 5px;"><input type="checkbox"/> Instructions Incomplete/unclear</td> </tr> <tr> <td style="padding: 5px;">Substation <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Process Improvement</td> <td style="padding: 5px;"><input type="checkbox"/> Marks/Chatter</td> <td style="padding: 5px;"><input type="checkbox"/> Drill Holes</td> </tr> <tr> <td style="padding: 5px;">Past Expiry Date <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Manufacturing Process</td> <td colspan="2" rowspan="2" style="padding: 5px; vertical-align: bottom;">OTHER :</td> </tr> <tr> <td style="padding: 5px;">Misidentified <input type="checkbox"/></td> <td style="padding: 5px;"><input type="checkbox"/> Past Due</td> </tr> </tbody> </table> |                                                |                                                 |                                                          |                                                                                                                                                                                                                                                                                                                                        |  | <b>Root Cause</b> |  |  |  |  |  | Environment <input type="checkbox"/> | <input type="checkbox"/> No Re-verification | <input type="checkbox"/> Pressure/Forced | <input type="checkbox"/> Temperature/Cu | <div style="float: right; width: 80%;"> <b>Dart Aerospace Ltd.</b><br/>           1270 Aberdeen Street<br/>           Hawkesbury, ON K6A 1K7<br/>           CANADA<br/>           TEL.: 1 613 632 - 5200<br/>           Email: sales@dartaero.com<br/>           www.dartaerospace.com         </div> <div style="clear: both;"></div> |  | Design <input type="checkbox"/> | <input type="checkbox"/> Operator | <input type="checkbox"/> Bending | <input type="checkbox"/> Set-up | Doc/Data <input type="checkbox"/> | <input type="checkbox"/> Offset/Setup | <input type="checkbox"/> Centre Not Concentric | <input type="checkbox"/> BOM/Route | Equip/Tooling <input type="checkbox"/> | <input type="checkbox"/> Supplier | <input type="checkbox"/> Cracks | <input type="checkbox"/> Broken/Damage/I | Handling/Pre <input type="checkbox"/> | <input type="checkbox"/> Training | <input type="checkbox"/> Crimp/Kink/Ripple/Wave | <input type="checkbox"/> Inspection Incomple | Material <input type="checkbox"/> | <input type="checkbox"/> Use for Testing | <input type="checkbox"/> Cuffs | <input type="checkbox"/> Contamination | Internal Transport <input type="checkbox"/> | <input type="checkbox"/> Poor Information | <input type="checkbox"/> Crushing | <input type="checkbox"/> Countersink | Tribal Knowledge <input type="checkbox"/> | <input type="checkbox"/> Rushing | <input type="checkbox"/> Heat Treat | <input type="checkbox"/> Cut Too Short | LOA <input type="checkbox"/> | <input type="checkbox"/> Product Improvement | <input type="checkbox"/> Wave/Twist in Tube | <input type="checkbox"/> Instructions Incomplete/unclear | Substation <input type="checkbox"/> | <input type="checkbox"/> Process Improvement | <input type="checkbox"/> Marks/Chatter | <input type="checkbox"/> Drill Holes | Past Expiry Date <input type="checkbox"/> | <input type="checkbox"/> Manufacturing Process | OTHER : |  | Misidentified <input type="checkbox"/> | <input type="checkbox"/> Past Due |
| <b>Root Cause</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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width: 80%;"> <b>Dart Aerospace Ltd.</b><br/>           1270 Aberdeen Street<br/>           Hawkesbury, ON K6A 1K7<br/>           CANADA<br/>           TEL.: 1 613 632 - 5200<br/>           Email: sales@dartaero.com<br/>           www.dartaerospace.com         </div> <div style="clear: both;"></div> |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                           |                                  |                                     |                                        |                              |                                              |                                             |                                                          |                                     |                                              |                                        |                                      |                                           |                                                |         |  |                                        |                                   |
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type="checkbox"/> Offset/Setup          | <input type="checkbox"/> Centre Not Concentric  | <input type="checkbox"/> BOM/Route                       |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                          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      |                                  |                                     |                                        |                              |                                              |                                             |                                                          |                                     |                                              |                                        |                                      |                                           |                                                |         |  |                                        |                                   |
| Equip/Tooling <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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type="checkbox"/> Supplier              | <input type="checkbox"/> Cracks                 | <input type="checkbox"/> Broken/Damage/I                 |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                     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| Handling/Pre <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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type="checkbox"/> Training              | <input type="checkbox"/> Crimp/Kink/Ripple/Wave | <input type="checkbox"/> Inspection Incomple             |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                           |                                  |                                     |                                        |                              |                                              |                                             |                                                          |                                     |                                              |                                        |                                      |                                           |                                                |         |  |                                        |                                   |
| Material <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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type="checkbox"/> Use for Testing       | <input type="checkbox"/> Cuffs                  | <input type="checkbox"/> Contamination                   |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                     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| Internal Transport <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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type="checkbox"/> Poor Information      | <input type="checkbox"/> Crushing               | <input type="checkbox"/> Countersink                     |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                     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| Tribal Knowledge <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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type="checkbox"/> Rushing               | <input type="checkbox"/> Heat Treat             | <input type="checkbox"/> Cut Too Short                   |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                     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| LOA <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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type="checkbox"/> Product Improvement   | <input type="checkbox"/> Wave/Twist in Tube     | <input type="checkbox"/> Instructions Incomplete/unclear |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                           |                                  |                                     |                                        |                              |                                              |                                             |                                                          |                                     |                                              |                                        |                                      |                                           |                                                |         |  |                                        |                                   |
| Substation <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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type="checkbox"/> Process Improvement   | <input type="checkbox"/> Marks/Chatter          | <input type="checkbox"/> Drill Holes                     |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                                        |  |                                 |                                   |                                  |                                 |                                   |                                       |                                                |                                    |                                        |                                   |                                 |                                          |                                       |                                   |                                                 |                                              |                                   |                                          |                                |                                        |                                             |                                           |                                   |                                      |                                           |                                  |                                     |                                        |                              |                                              |                                             |                                                          |                                     |                                              |                                        |                                      |                                           |                                                |         |  |                                        |                                   |
| Past Expiry Date <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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type="checkbox"/> Manufacturing Process | OTHER :                                         |                                                          |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                          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      |                                  |                                     |                                        |                              |                                              |                                             |                                                          |                                     |                                              |                                        |                                      |                                           |                                                |         |  |                                        |                                   |
| Misidentified <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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type="checkbox"/> Past Due              |                                                 |                                                          |                                                                                                                                                                                                                                                                                                                                        |  |                   |  |  |  |  |  |                                      |                                             |                                          |                                         |                                                                                                                                                                                                                                                                                                                          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**S022474**



**Mid Tube Assembly**

**D3391 - 023**

**Start up Operation**

Mfg Date: 12/14/17  
 Job No: 168940

Working Order Update Only

Engineering ☐

Quality ☐

Other ☐

(2) Approval \_\_\_\_\_

Ted By \_\_\_\_\_

Supervisor \_\_\_\_\_  
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Director \_\_\_\_\_  
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|-------------------------------------------|
| <input type="checkbox"/> Finish           |
| <input type="checkbox"/> Misread          |
| <input type="checkbox"/> Turning Sequence |

185 - Re-alodine

191 - PRIME AS PER DWG AND QSI005 4.2.1.3.3 PRIMER BATCH: 138408 PAINT AS PER DWG AND QSI005 4.2.2.4 PAINT: 138714

230 - 1-Install Inserts as per Dwg

### Job Allocations

| Operation             | Component Part               | Required | Inventory | Allocated | Std Qty |
|-----------------------|------------------------------|----------|-----------|-----------|---------|
| 90-Start up Operation | D2500-1-100 <u>163253</u>    | 1        | 92        | 0         | 0       |
| 140-Skidtubes         | D3389-1 <u>5018928</u>       | 1        | 8         | 0         | 0       |
| 160-Skidtubes         | D3681-1 <u>5019147</u>       | 5        | 111       | 0         | 0       |
| 230-HandFinish        | ALS4-1032-130 <u>5007279</u> | 20       | 11,934    | 0         | 0       |
|                       | D3591-1 <u>5019103</u>       | 2        | 85        | 0         | 0       |

### Part Specifications

Specifications could not be found.

Plex 11/27/17 11:25 AM Dart.lajeunesse.marie

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK ORDER NON-CONFORMANCE / UPDATE

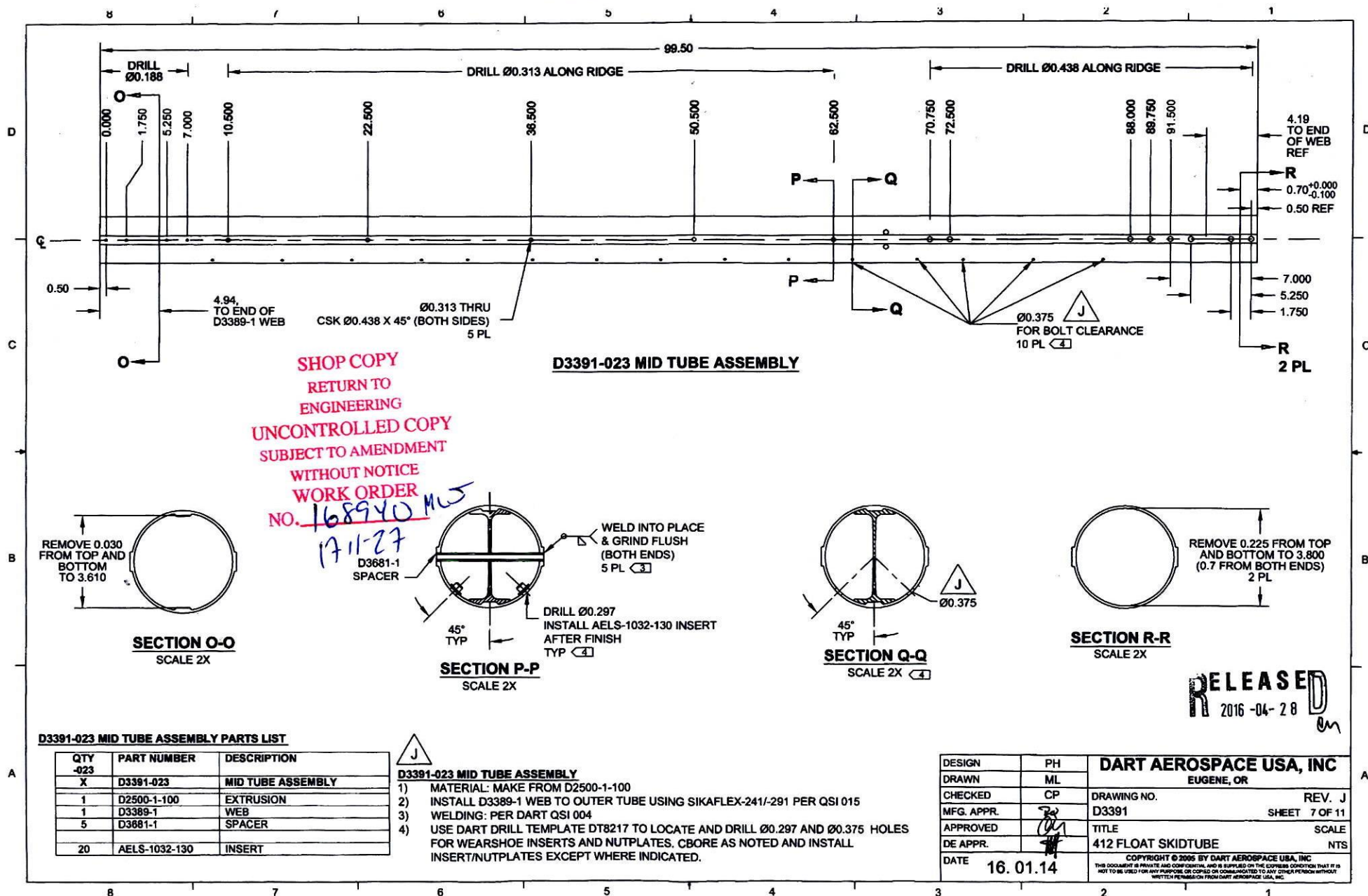


QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                               |  |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | <b>MRB (QSI042) Approval</b><br><br><b>Completed By</b><br><br><b>Lead hand / Supervisor Approval Verification</b><br><br><b>QC / QA Coordinator Approval</b> |  |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                               |  |  |
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| <b>Root Cause</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Environment <input type="checkbox"/><br/>           Design <input type="checkbox"/><br/>           Doc/Data <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Pre <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Internal Transport <input type="checkbox"/><br/>           Tribal Knowledge <input type="checkbox"/><br/>           LOA <input type="checkbox"/><br/>           Substation <input type="checkbox"/><br/>           Past Expiry Date <input type="checkbox"/><br/>           Misidentified <input type="checkbox"/> </div> <div>           No Re-verification <input type="checkbox"/><br/>           Operator <input type="checkbox"/><br/>           Offset/Setup <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Training <input type="checkbox"/><br/>           Use for Testing <input type="checkbox"/><br/>           Poor Information <input type="checkbox"/><br/>           Rushing <input type="checkbox"/><br/>           Product Improvement <input type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Past Due <input type="checkbox"/> </div> </div> |  | <b>FAULT CATEGORY</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Pressure/Forced <input type="checkbox"/><br/>           Bending <input type="checkbox"/><br/>           Centre Not Concentric <input type="checkbox"/><br/>           Cracks <input type="checkbox"/><br/>           Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>           Cuffs <input type="checkbox"/><br/>           Crushing <input type="checkbox"/><br/>           Heat Treat <input type="checkbox"/><br/>           Wave/Twist in Tube <input type="checkbox"/><br/>           Marks/Chatter <input type="checkbox"/> </div> <div>           Temperature/Cure <input type="checkbox"/><br/>           Set-up <input type="checkbox"/><br/>           BOM/Route <input type="checkbox"/><br/>           Broken/Damage/Defect <input type="checkbox"/><br/>           Inspection Incomplete/Unqualified <input type="checkbox"/><br/>           Contamination <input type="checkbox"/><br/>           Countersink <input type="checkbox"/><br/>           Cut Too Short <input type="checkbox"/><br/>           Instructions Incomplete/Unclear <input type="checkbox"/><br/>           Drill Holes <input type="checkbox"/> </div> <div>           Power Loss/Surge <input type="checkbox"/><br/>           Folio/Program <input type="checkbox"/><br/>           Grain <input type="checkbox"/><br/>           Weld <input type="checkbox"/><br/>           Wrong Stock Pulled <input type="checkbox"/><br/>           Out of Sequence <input type="checkbox"/><br/>           Off-set <input type="checkbox"/><br/>           Misabeled <input type="checkbox"/><br/>           Fit/Function <input type="checkbox"/><br/>           Misaligned/off center <input type="checkbox"/> </div> <div>           Positioned Wrong <input type="checkbox"/><br/>           Outside Dimensions <input type="checkbox"/><br/>           Over/Under tolerance <input type="checkbox"/><br/>           Part Incorrect <input type="checkbox"/><br/>           Part Lost/Missing <input type="checkbox"/><br/>           Part Moved <input type="checkbox"/><br/>           Drawing <input type="checkbox"/><br/>           Finish <input type="checkbox"/><br/>           Misread <input type="checkbox"/><br/>           Turning Sequence <input type="checkbox"/> </div> </div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                               |  |  |
| OTHER : <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                               |  |  |





DQA: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                      |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>             Skid-tube <input type="checkbox"/><br/>             Machining <input type="checkbox"/><br/>             Thermoforming <input type="checkbox"/><br/>             Large Fab <input type="checkbox"/> </div> <div>             Cross tube <input type="checkbox"/><br/>             Small Fab <input type="checkbox"/><br/>             Finishing <input type="checkbox"/><br/>             Composite <input type="checkbox"/> </div> <div>             Water Jet <input type="checkbox"/><br/>             Prod. Eng. Coord. <input type="checkbox"/><br/>             Rec/Store/Packaging <input type="checkbox"/><br/>             Supplier <input type="checkbox"/> </div> <div>             Engineering <input type="checkbox"/><br/>             Quality <input type="checkbox"/><br/>             Other <input type="checkbox"/> </div> </div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | MRB (QSI042) Approval                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | Completed By                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | FAULT CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Environment <input type="checkbox"/><br>Design <input type="checkbox"/><br>Doc/Data <input type="checkbox"/><br>Equip/Tooling <input type="checkbox"/><br>Handling/Pre <input type="checkbox"/><br>Material <input type="checkbox"/><br>Internal Transport <input type="checkbox"/><br>Tribal Knowledge <input type="checkbox"/><br>LOA <input type="checkbox"/><br>Substation <input type="checkbox"/><br>Past Expiry Date <input type="checkbox"/><br>Misidentified <input type="checkbox"/> |  | No Re-verification <input type="checkbox"/><br>Operator <input type="checkbox"/><br>Offset/Setup <input type="checkbox"/><br>Supplier <input type="checkbox"/><br>Training <input type="checkbox"/><br>Use for Testing <input type="checkbox"/><br>Poor Information <input type="checkbox"/><br>Rushing <input type="checkbox"/><br>Product Improvement <input type="checkbox"/><br>Process Improvement <input type="checkbox"/><br>Manufacturing Process <input type="checkbox"/><br>Past Due <input type="checkbox"/> |  | Pressure/Forced <input type="checkbox"/><br>Bending <input type="checkbox"/><br>Centre Not Concentric <input type="checkbox"/><br>Cracks <input type="checkbox"/><br>Crimp/Kink/Ripple/Wave <input type="checkbox"/><br>Cuffs <input type="checkbox"/><br>Crushing <input type="checkbox"/><br>Heat Treat <input type="checkbox"/><br>Wave/Twist in Tube <input type="checkbox"/><br>Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Temperature/Cure <input type="checkbox"/><br>Set-up <input type="checkbox"/><br>BOM/Route <input type="checkbox"/><br>Broken/Damage/Defect <input type="checkbox"/><br>Inspection Incomplete/Unqualified <input type="checkbox"/><br>Contamination <input type="checkbox"/><br>Countersink <input type="checkbox"/><br>Cut Too Short <input type="checkbox"/><br>Instructions Incomplete/Unclear <input type="checkbox"/><br>Drill Holes <input type="checkbox"/> |  | Power Loss/Surge <input type="checkbox"/><br>Folio/Program <input type="checkbox"/><br>Grain <input type="checkbox"/><br>Weld <input type="checkbox"/><br>Wrong Stock Pulled <input type="checkbox"/><br>Out of Sequence <input type="checkbox"/><br>Off-set <input type="checkbox"/><br>Misabeled <input type="checkbox"/><br>Fit/Function <input type="checkbox"/><br>Misaligned/off center <input type="checkbox"/> |  | Positioned Wrong <input type="checkbox"/><br>Outside Dimensions <input type="checkbox"/><br>Over/Under tolerance <input type="checkbox"/><br>Part Incorrect <input type="checkbox"/><br>Part Lost/Missing <input type="checkbox"/><br>Part Moved <input type="checkbox"/><br>Drawing <input type="checkbox"/><br>Finish <input type="checkbox"/><br>Misread <input type="checkbox"/><br>Turning Sequence <input type="checkbox"/> |  |
| OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |